HUB 24

D I M M E R

OPERATING MANUAL

JANDS

EMC COMPLIANCE

This product is approved for use in Europe and Australia / New Zealand and conforms to the following standards:

European Norms	Australian / New Zealand Standards
EN 50081-1	AS/NZS 4252.1
EN 50082-1	AS/NZS 4251.1
EN 60065	AS/NZS 3260

To ensure continued compliance with EMC Directive 89/336 and the Australian Radiocommunications Act 1992, use only high quality data cables with continuous shield, and connectors with conductive backshells. Examples of such cables are:

DMX: Belden 8102 100% Aluminium foil screen, 65% Copper braid.

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It is recommended that all service and repairs on this product be carried out by JANDS ELECTRONICS Pty Ltd or its authorised service agents.

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Disconnect power when not in use.

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Supplied Items

1. HUB24 Dimmer.
2. User Manual.
3. Warranty Registration Card.

Optional Accessories

- Reinforced Protective Cover (part No. JND-DC-HUB24).
- HUB Download Kit (part No. JND-HUB24DOWNLOAD)
  - PC Download cable
  - Jands Dimmer Utility software
- Wall mounting bracket (part No. JND-HUB24WMB).
- Hand-Rail Mounting brackets (part No. JND-HUB24HRB).

1 Introduction

The JANDS HUB24 is a unique combination of dimmer channels, power distribution and isolated DMX splitting, all in one compact and low noise package. The HUB24 is specifically designed for demanding touring and theatre applications and is ideal for shows where a mixture of conventional and automated lights are used.

Especially suitable for live shows, school auditoriums, trade shows and other similar applications, the HUB24 eliminates the usual clutter associated with dimmer racks, power distribution boxes and DMX splitters. The HUB24 also includes the ability to record and playback snapshots and chases without a lighting console.

One HUB24 incorporates:

- 15 Dimmer outputs
- 9 Power Distribution outputs
- 1 in 2 out opto-isolated DMX splitter

HUB24 dimmers use a chokeless IGBT output topology for reduced weight and low acoustic noise. The unit is primarily cooled by natural convection; small fans will turn on only in extreme circumstances.

The unit monitors the supply current drawn on each phase. If more than a preset limit is drawn from a phase, all the dimmer outputs on that phase are dimmed down until the current is near to the limit. This ensures connector and upstream circuit breaker current ratings are not exceeded for long periods of time.

The HUB24 features microprocessor-based digital control. A menu-driven user interface, consisting of only two buttons, an encoder wheel and a large graphics LCD, enables the user to easily monitor and select all the built-in functions.

The user has the ability to soft patch the channels out of sequence, test selected channels while the remainder of the dimmer stays on-line, download custom dimming curves, capture or build up to eight non-volatile snapshots and chases.

Other functions provided are dimmer “soft” start, bad (soft) neutral detection, monitoring supply voltage, current and other working parameters of the unit.

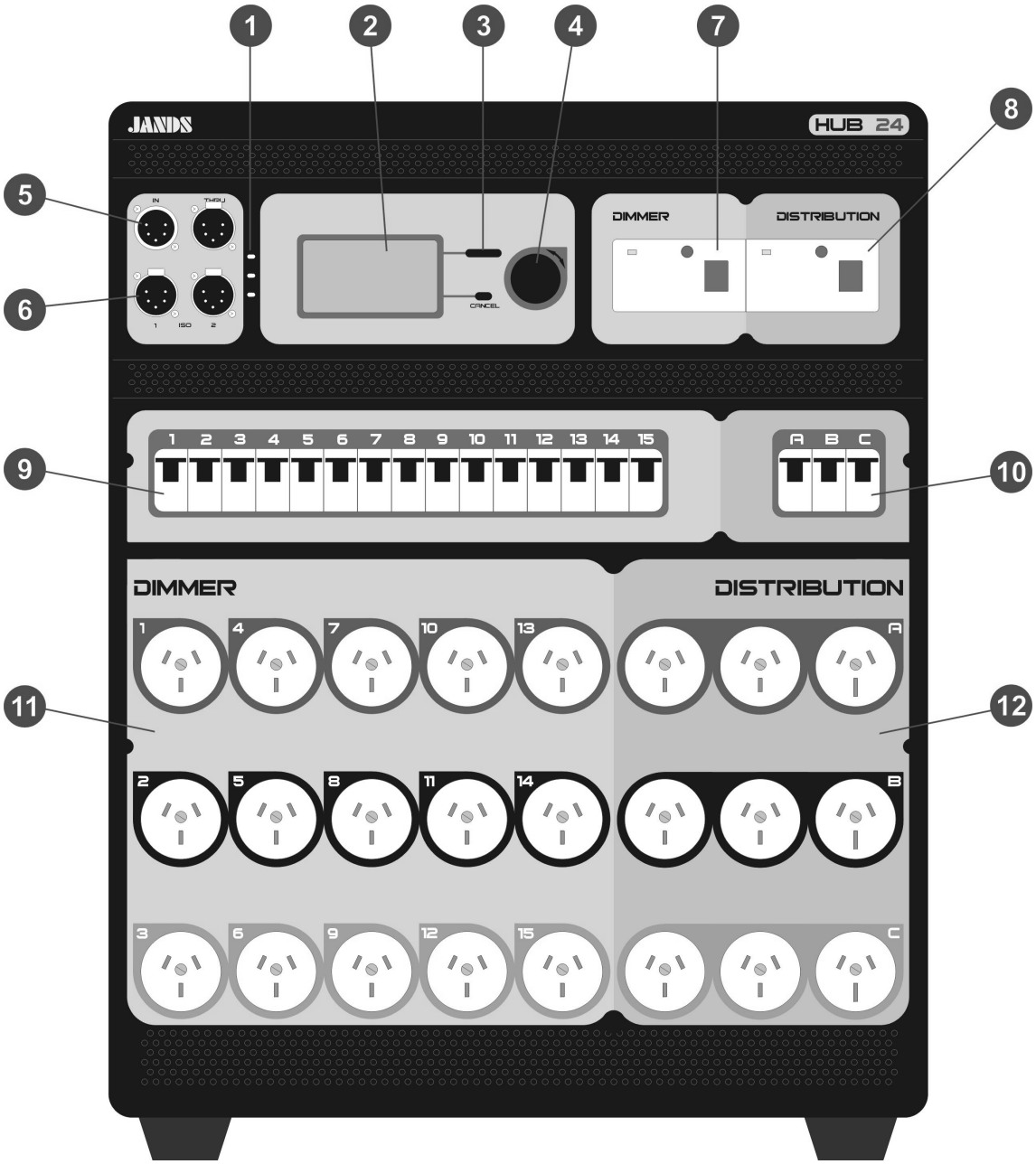
Control signal connection to the HUB24 is via a standard DMX-512 socket located on the front panel along with DMX through and two opto-isolated DMX outputs. Also located on the front panel are the dimmer and distribution output sockets. The three phase power entry and a cable tray are located on the rear panel.

The unit will “wake-up” in the mode it was last programmed to run - an ideal function for stand alone applications. If no particular mode has been previously defined, the unit looks for DMX control. The user has the ability to set how the HUB24 will respond if DMX control is lost, but in all cases the dimmer outputs will turn off if the DMX signal is not restored within 10 minutes.

The HUB24 range of dimmers have been designed to receive future optional software upgrades to the operating system, without opening the unit.

The HUB24 is convenient to transport due to its solid carry handles, protective transportation bag and built-in cable tray for storage of the three phase cable.

An optional wall bracket allows the HUB24 to be wall-mounted and optional hand-rail mounting brackets allow the HUB24 to be mounted on a catwalk rail.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JANDS
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A B C
DIMMER
DISTRIBUTION
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2 5 8 11 14
3 6 9 12 15
A
B
C

Figure 2.1

2 Equipment Description

Front panel layout

☜ Figure 2.1

1. **Phase Power LEDs:** Three different coloured LEDs (one for each phase) indicate that the mains supply phases are available. Red for phase A, White for phase B and Blue for phase C.

2. **Display:** Large graphics LCD, used to display dimmer status information and to control the menus.

3. **Menu buttons:** 2 buttons are used to navigate the menus and save changes.

4. **Encoder wheel:** This detent action control knob is used to select items from the menus and to select the channel levels or chase rate (depending on the operating mode).

5. **DMX IN/THRU connectors:** A standard five pin AXR connector receives DMX-512 signals from a control source and a second “Thru” connector links signal to other DMX equipment. See section 8.1 for wiring details.

6. **DMX OPTO-OUT connectors:** Two fully isolated DMX outputs, using standard five pin AXR connectors. See section 8.1 for wiring details.

7. **Dimmer RCD protection:** A three phase RCD protects the dimmer outputs. It must not be used as load break switch.

8. **Distribution RCD protection:** A three phase RCD protects the power distribution outputs. It must not be used as load break switch.

9. **Dimmer circuit breakers:** 15 circuit breakers, one for each dimmer output.

10. **Distribution circuit breakers:** 3 circuit breakers, each one supplies a row of 3 separate distribution outputs.

11. **Dimmer Output connectors:** 15 dimmer output sockets.

12. **Distribution Output connectors:** 9 distribution output sockets.

3 Getting Started

3.1 Positioning the Unit

Correct positioning and adequate ventilation are essential for reliable operation. Ensure the transportation bag or road case is totally removed before use. The HUB24 must be upright when in use, with clearances of 100mm behind, 200mm above and 100mm on each side. The unit's feet provide air intakes (front, back & 2 sides), these openings must not be obstructed.

See section 6.2 for wall mounting details. See your Jands distributor for other mounting options.

3.2 Connecting power

The three phase cable must be completely removed from the cable tray before applying power to the unit.

The mains supply to the HUB24 dimmers must be protected by upstream circuit breakers or fuses (see sections 8.2.3 & 8.2.4). If the supply cable is damaged, it must be replaced with a cable available from JANDS or its service agents.

The power plug must be connected to an appropriately rated socket outlet. The plug's retaining lock ring (if present) must be screwed home.

WARNING

DAMAGE MAY OCCUR IF THE RETAINING LOCK RING IS NOT PROPERLY SECURED.

Ensure adequate mains socket access once the dimmer is installed, to allow for switching the HUB24 on and off.

Turn on the power and check that the three **PHASE** indicator LEDs are on. Check the large display is on and not showing any faults before connecting any loads. If the **PHASE** LEDs or the display indicate a fault condition, power down and remedy the fault before trying again. See section 5.5 regarding phase faults.

3.3 Set DMX start channel

The HUB24's dimmer outputs respond to 15 DMX channels. The first channel can be set anywhere from channel 1 to channel 512, the remaining channels will follow in sequence.

- At the main screen (see section 4.1) press the large button 3 times (to select **Menu → 1 DMX Settings → 1-1 Start Channel**).
- Turn the **encoder wheel** to change the displayed DMX channel.
- Press the large button (now shown as **OK**) to save the new start channel.

See section 4.2.2 if the dimmer outputs need to respond to out of sequence DMX channels.

3.4 Connecting loads

Power down the HUB24.

Plug in the loads to the Dimmer output sockets. It is recommended that, where practical, the load on the dimmer outputs be evenly spread across the 15 channels. This will minimise fan noise and make it harder to overload a single phase.

Ensure the load on each dimmer output is greater than the minimum (see section 5.7).

Plug in the loads to the Distribution output sockets. Each output must not be loaded beyond the capacity of its socket.

3.5 Connecting DMX-512

The dimmer input signal should conform to the USITT DMX-512 (1990) specification. See section 8.1 for connector wiring details.

The status of the DMX signal is indicated on the bottom of the display.

The DMX input to the HUB24 dimmers connects to the IN socket on the front panel. The DMX signal may be daisy-chained to the next dimmer via the THRU socket. If the THRU socket is not being used see section 4.2.3 for how to terminate the DMX segment.

The two ISO sockets may be used to start two new fully isolated DMX segments, which may be required for:

- Isolating DMX segments that run to equipment that is powered from different supplies.
- Star DMX network topology.
- Amplifying the DMX signal for extremely long cable runs.
- Driving more than the normal maximum of 32 devices from a console.

3.6 Power-up sequence

When powering up, the following sequence should be used:

1. Power up the control desk.
2. Power up any softpatches and/or DMX receivers.
3. Ensure the dimmer RCDs and circuit breakers are switched on.
4. Power up the dimmers last, preferably one at a time starting from the first dimmer rack in the DMX loop.

This procedure minimises the risk of lamps and fixtures responding to any false DMX data produced by control desks or ancillary equipment at turn-on (producing the lighting equivalent of an audio “thump”) and prevents damage to lamps, dimmers, and other controlled devices.

Use the reverse procedure when powering down.

Menu Structure Overview

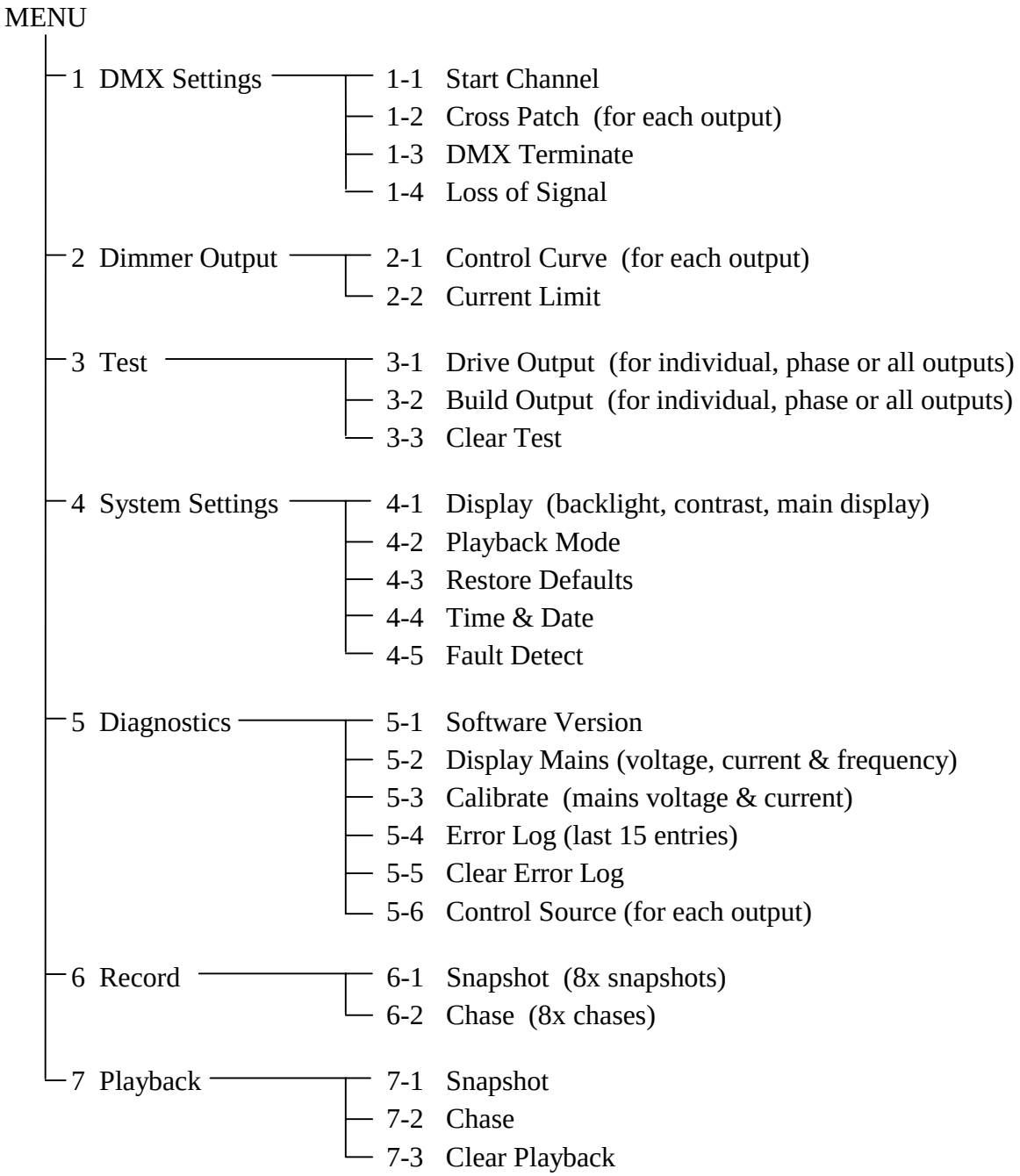


Figure 4.1

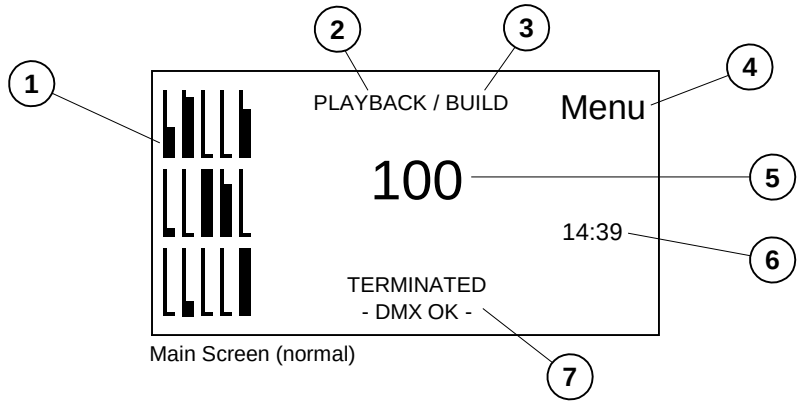
4 Dimmer Operation

This section assumes the dimmer has been correctly connected to three phase power and a source of DMX input signal, as described in section 3.

In this manual, references to individual front panel buttons will be in uppercase bold text, eg. **CANCEL**, while references to display messages will be in quotation marks, eg. **"Test"**.

4.1 Main Screen

The Main Screen is the screen that is displayed when the menu is not being used and no errors or warnings are indicated. See section 4.2.12 for details of changing the contents of the main screen.



Main Screen (normal)

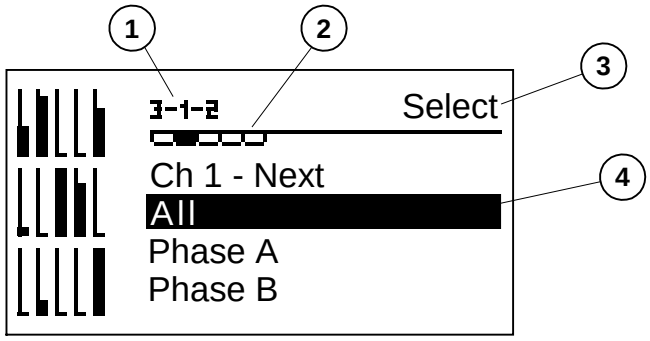
Information displayed on the normal main screen:

1. Bar graph mimic of the actual control level of each dimmer output, before the control curve is applied (from all sources: DMX, playback & test).
2. 'Playback' is displayed when Snapshots and Chases are being played back on one or more channels.
3. 'Build' is displayed when Test Build has control of one or more channels.
4. Function of the large button (see section 4.2).
5. DMX address of the 1st dimmer channel.
6. Present time (24hr format).
7. Status of the DMX input signal & termination.

4.2 Menu structure

All the functions and settings of the HUB24 are accessed through a menu. An overview (first two levels) of this menu structure is shown in figure 4.1. Except where noted, the menu will automatically return to the main screen after 20 seconds of no button presses or encoder wheel movements.

The menu uses a "tree" structure, consisting of multiple levels of sub-menus with the main screen being the start of the tree. Navigation of the menu entails highlighting a sub-menu using the **encoder wheel** and pressing the large button to move to the highlighted sub-menu level. The **encoder wheel** is then used to highlight the next sub-menu, the large button is pressed again to move to another level, and so on.



A typical menu screen

Information displayed on a menu:

1. Numbering showing the current location within the menu tree.
2. Tabs showing the number of items in this sub-menu with current position highlighted.
3. Function of the large button (see below).
4. Highlighted menu item.

The large button performs different functions depending on the current sub-menu. The button's label is always shown in the top right hand corner of the display.

The various functions of the large button are:

MENU	enters the first level of the menu tree
SELECT	moves into the highlighted menu item
OK	saves the new value and exits the current screen
NEXT	jumps to the next channel or item
RECORD	record a snapshot or chase step
CONFIRM	perform the displayed action

The **CANCEL** button is always used to move back from a sub-menu to the previous menu level. This button will exit a screen without saving changes. Pressing **CANCEL** five times will return to the main screen from anywhere in the menu tree.

4.2.1 DMX Start Channel (1-1)

Menu → 1 DMX Settings → 1-1 Start Channel

The HUB24's dimmer outputs can be set to respond to 15 consecutive DMX channels, the first channel can be set anywhere from 1 to 512. By setting the start channel to 1, the dimmer will respond to DMX channels 1 through 15 inclusive. When using racks of looped dimmers, the next dimmer should start at channel 16, the one after that at channel 31, and so on.

- Select **"1-1 Start Channel"** on the menu.
- Turn the **encoder wheel** to change the displayed start channel.
- Press **OK** to save the new start channel and exit.

Note: If the start channel is set above 498, the dimmer outputs that would have been above 512 will be set to not connected and not respond to the DMX signal.

4.2.2 DMX Cross Patch (1-2)

Menu → 1 DMX Settings → 1-2 Cross Patch

Each of the HUB24's dimmer outputs can be set to individually respond to any DMX channel, from 1 to 512. This allows the outputs to be patched out of sequence.

- Select **"1-2 Cross Patch"** on the menu.
- Turn the **encoder wheel** to highlight a dimmer output and press **SELECT**.
- Turn the **encoder wheel** to changed the displayed DMX channel.
- Press **OK** to save the new DMX channel and exit.
- Repeat for each dimmer output.

Note: Setting a dimmer output to 'NC' means that output will ignore the DMX.

4.2.3 DMX Terminate (1-3)

Menu → 1 DMX Settings → 1-3 DMX Terminate

The HUB24 has an internal DMX termination function. The last device in the DMX line (ie. With its DMX Thru connector not used) should have the DMX terminate turned on.

- Select **"1-3 DMX Terminate"** on the menu
- Turn the **encoder wheel** to highlight either **"Terminate"** or **"Continue"**.
- Press **OK** to save the new termination setting and exit.

Note: Termination does not apply to the opto-isolated DMX outputs.

4.2.4 Loss of DMX Signal (1-4)

Menu → 1 DMX Settings → 1-4 Loss of Signal

If the DMX control signal is lost, there are options on how the HUB24 will respond, but in all cases the dimmer outputs will turn off if the DMX signal is not restored within 10 minutes.

- Select **"1-4 Loss of Signal"** on the menu.
- Turn the **encoder wheel** to highlight either **"Hold"**, **"Fade to 0"** or **"Fade to Snap 1"**.
- Press **OK** to save the new signal loss setting and exit.

4.2.5 Output Control Curve (2-1)

Menu → 2 Dimmer Output → 2-1 Control Curve

The HUB24 contains four control curves, which can be assigned to each dimmer output individually. The two preset curves are Linear Power and Switched, while the remaining two are user definable.

The linear power curve gives even fade characteristics for lamps. The switched curve may be used for controlling devices that should not be dimmed (eg. strobes, motors, foggers, etc).

The user definable curves can be used for lamps whose light output is not linear, for lamps with special requirements (eg. fluorescent tubes) or if any special curve is required.

The user definable curves are created and edited on a PC (or Laptop) using Jands Dimmer Utility software and downloaded to the dimmer. See appendix A for how to use the Dimmer Utility software and see section 4.4 on how to download the curves to the HUB24.

- Select **"2-1 Control Curve"** on the menu.
- Turn the **encoder wheel** to highlight a dimmer output and press **SELECT**.
- Turn the **encoder wheel** to highlight one of the four control curves.
- Press **OK** to apply the new curve to the dimmer output and exit.
- Repeat for each dimmer output.

4.2.6 Supply Current Limit (2-2)

Menu → 2 Dimmer Output → 2-2 Current Limit

The HUB24 constantly monitors the supply current, in each phase, consumed by both the dimmer and distribution outputs. If more than a preset limit is drawn from a phase, all the dimmer outputs on that phase are dimmed down until the current drops to near the preset limit.

- Select **"2-2 Current Limit"** on the menu.
- Turn the **encoder wheel** to highlight **"32A"** or **"40A"** or **"50A"** or **"63A"** or **"No limit"**.
- Press **OK** to save the new current limit and exit.

4.2.7 Drive Outputs (3-1)

Menu → 3 Test → 3-1 Drive Output

Drive output allows testing of each dimmer output from the menu, with or without a console present. A single output, all 5 outputs on a phase or all 15 outputs can temporarily be faded from 0% to 100%. After testing, each dimmer output returns to its previous level.

Note: The drive output menus do not timeout and return to the main screen.

Single Output

- Select **"3-1 Drive Output"** on the menu.
- Ensure **"Ch 1 - Next"** is highlighted and press **SELECT**.
- The present drive level of the selected output will be displayed as a percentage. Turn the **encoder wheel** to change this output level.
- Press **NEXT** to control to the next output, the previous output will revert back to its original level. Repeat the previous step for the new output.
  Note: Pressing NEXT when driving Ch 15 will jump back to Ch 1.
- Press **CANCEL** at any time to exit, all outputs revert back to original levels.

Single Phase or All Outputs

- Select **"3-1 Drive Output"** on the menu.
- Turn the **encoder wheel** to highlight either **"All"**, **"Phase A"**, **"Phase B"** or **"Phase C"** and press **SELECT**.
- All the selected outputs will be set to zero. Turn the **encoder wheel** to directly change the drive level of all the selected outputs.
- Press **CANCEL** to exit, all outputs will revert back to their original levels.

4.2.8 Build Outputs (3-2)

Menu → 3 Test → 3-2 Build Output

The build output menu operates in the same way as drive outputs (see 4.2.7) however the levels are not lost when the menu is exited.

Build output allows the user to take control of the dimmer outputs from the menu. Individual outputs, all 5 outputs on a phase or all 15 outputs can be faded from 0% to 100% and permanently remain at that level until cleared by the user.

Note: Build outputs does not take control of the output(s) until the encoder wheel has been moved.

4.2.9 Clear Test (3-3)

Menu → 3 Test → 3-3 Clear Test

Clear Test allows restoring of DMX control to the outputs that were being controlled by Test Build outputs.

- Select **"3-3 Clear Test"** on the menu.
- Press **CONFIRM** to release all outputs from Build control and exit.

4.2.10 Backlight Activation (4-1-1)

Menu → 4 System Settings → 4-1 Display → 4-1-1 Backlight Activation

The liquid crystal display has backlighting to enable it to be read in the dark. This backlight can be set to turn off when the menu is not in use or set to always on.

- Select **"4-1-1 Backlight Activation"** on the menu.
- Turn the **encoder wheel** to highlight either **"On"**, **"Auto 20 secs"** or **"Auto 5 mins"**.
- Press **OK** to save the backlight activation setting and exit.

4.2.11 Backlight Intensity (4-1-2)

Menu → 4 System Settings → 4-1 Display → 4-1-2 Backlight Intensity

The intensity of the LCD backlight can be changed to suit the ambient light level.

- Select **"4-1-2 Backlight Intensity"** on the menu.
- Turn the **encoder wheel** to change the backlight intensity.
- Press **OK** to save the new backlight intensity and exit.

4.2.12 Display Contrast (4-1-3)

Menu → 4 System Settings → 4-1 Display → 4-1-3 Contrast

The contrast of the LCD display can be changed to suit the required viewing angle.

- Select **"4-1-3 Contrast"** on the menu.
- Turn the **encoder wheel** to change the contrast level (1 is light, 16 is dark).
- Press **OK** to save the new contrast and exit.

4.2.13 Main Display (4-1-4)

Menu → 4 System Settings → 4-1 Display → 4-1-4 Main Display

The information that is shown on the main screen can be configured. The options are Normal, Mains Monitor and Custom Logo. See appendix A for how to create and edit custom logos on a PC (or Laptop) and see section 4.4 for how to download them to the HUB24.

The owner's logo and/or contact details can be shown on the LCD at the main screen. The logo can be password protected so it can't be overwritten by somebody hiring the unit.

- Select **"4-1-4 Main Display"** on the menu.
- Turn the **encoder wheel** to highlight either **"Normal"**, **"Mains Monitor"** or **"Custom Logo"**.
- Press **OK** to save the new main display setting and exit.

4.2.14 Playback Mode (4-2)

Menu → 4 System Settings → 4-2 Playback Mode

When playing back snapshots and chases the HUB24 can also continue to respond to the incoming DMX signal. How the playback and DMX signal are merged together can be configured. **"Override"** ignores the DMX signal, while **"HTP"** does highest takes precedence for the level of each channel.

- Select **"4-2 Playback Mode"** on the menu.
- Turn the **encoder wheel** to highlight either **"Override"** or **"HTP"**.
- Press **OK** to save the new playback mode and exit.

4.2.15 Restore Defaults (4-3)

Menu → 4 System Settings → 4-3 Restore Defaults

- Select **"4-3 Restore Defaults"** on the menu.
- Press **CONFIRM** to restore the following settings back to their default values:
  - DMX Terminate to Off.
  - DMX Loss of signal to Hold.
  - Control Curve to Linear for all channels.
  - Current Limit to 32 Amps.
  - Fault Detect to Detect Faults.

- LCD Contrast and Backlight to defaults.
- Main Screen to Normal.
- Playback Mode to Override.
- Chase parameters to defaults (chase steps are not affected).

Other Settings such as DMX cross patch and the time are not changed.

To ensure all dimmer outputs are restored to DMX control, select **"3-3 Clear Test"** and select **"7-3 Clear Playback"** with **"7-3-1 All"**.

4.2.16 Set Time & Date (4-4)

The HUB24 has an in-built clock, that keeps track of the time & date, even when the power is off. The time & date is logged with each entry in the error log.

Menu → 4 System Settings → 4-4 Time & Date

- Select **"4-4 Time & Date"** on the menu.
- Turn the **encoder wheel** to change the "hours" and press **NEXT**.
- Turn the **encoder wheel** to change the "minutes" and press **NEXT**.
- Turn the **encoder wheel** to change the "day" and press **NEXT**.
- Turn the **encoder wheel** to change the "month" and press **NEXT**.
- Turn the **encoder wheel** to change the "year".
- Press **CANCEL** to exit .

4.2.17 Fault Detect (4-5)

Menu → 4 System Settings → 4-5 Fault Detect

The HUB24 will detect voltage problems generated by a poor or missing neutral connection. Normally when a fault is detected, all the dimmer outputs are turned off and a "Neutral Earth Fault" warning is displayed, until the fault is removed and a button pressed. See section 5.1.4 for more detail.

In some venues the three phase power supply may be less than ideal, with a "Neutral Earth Fault" warning occurring without the wiring being truly "faulty". For this reason it is possible (but not recommended) to disable the neutral earth fault detection. ALWAYS check first that the problem is not a dropped neutral in either the three phase socket or plug and ensure the earth connection is good.

WARNING

IF THE NEUTRAL EARTH FAULT DETECTION IS DISABLED, UNSAFE MAINS SUPPLY WIRING MAY NOT TO BE DETECTED.

Re-enable the neutral earth fault detection before the HUB24 changes venues.

- Select **"4-5 Fault Detect"** on the menu.
- Turn the **encoder wheel** to highlight either **"Detect Faults"** or **"Ignore Faults"**.
- Press **OK** to save the new fault detect setting and exit.

4.2.18 Software Version (5-1)

Menu → 5 Diagnostics → 5-1 Software Version

Select **"5-1 Software Version"** on the menu to display the version and date of the operating software currently in the HUB24. This changes when a new version of the operating software is downloaded into the unit. Refer to the Jands web site for the latest version: www.jands.com.au

4.2.19 Display Mains (5-2)

Menu → 5 Diagnostics → 5-2 Display Mains

The HUB24 will display the mains voltage and current for each phase and mains frequency. Note: this screen will not timeout and return to the main screen.

- Select **"5-2 Display Mains"** on the menu.
- Press **CANCEL** to exit.

4.2.20 Calibrate Voltage (5-3-1)

Menu → 5 Diagnostics → 5-3 Calibrate → 5-3-1 Voltage

For the voltage reading shown on the Mains Monitor screen to remain accurate, the HUB24 must be calibrated regularly.

Note: An external voltmeter is necessary to complete this procedure.

- Select **"5-3-1 Voltage"** on the menu.
- Turn the **encoder wheel** to highlight **"Phase A"**.
- Press **SELECT**.
- Use an external voltmeter to measure the mains voltage on phase A.
- Turn the **encoder wheel** to adjust the displayed voltage until it reads the same as the reading on the voltmeter.
- Press **OK** to save a new voltage calibration setting for phase A.

Repeat for the other two phases.

4.2.21 Calibrate Current (5-3-2)

Menu → 5 Diagnostics → 5-3 Calibrate → 5-3-2 Current

For the current reading shown on the Mains Monitor screen and Current Limiting to remain accurate, the HUB24 must be calibrated regularly.

- Turn off all 18 circuit breakers, dimmer and distribution, to ensure all the loads are disconnected.
- Select **"5-3-2 Current"** on the menu.
- Press **OK** to recalibrate the current readings.

4.2.22 Error Log (5-4)

Menu → 5 Diagnostics → 5-4 Error Log

When an event occurs that generates an error or warning, a message is immediately displayed on the LCD and an entry is placed in the error log.

Neutral Earth Warnings – see section 5.1.4.

Fan Activated Warning – see section 5.1.3.

Software Exception Error – see section 5.3.

The error log will hold up to 15 entries, if an 16th error occurs the oldest entry is discarded to make room for the new entry. The error log can be viewed on the display, the most recent entry will be at the bottom of the list.

- Select **"5-4 Error Log"** to display a list of the entries in the error log.
- Turn the **encoder wheel** to highlight one of the log entries.
- Press **SELECT** to view more details of the log entry.
- Press **CANCEL** to return to the error log list.

4.2.23 Clear Error Log (5-5)

Menu → 5 Diagnostics → 5-5 Clear Error Log

The error log can be cleared, with all the errors and warnings being removed.

- Select **"5-5 Clear Error Log"** on the menu.
- Press **CONFIRM** to clear the error log.

4.2.24 Control Source (5-6)

Menu → 5 Diagnostics → 5-6 Control Source

The control of each dimmer output can come from several sources:

- Test
- Playback a snapshot
- Playback a chase
- DMX

Test overrides the incoming DMX signal. Playback can be configured to override the DMX signal or to merge the two (see section 4.2.14).

- Select **"5-6 Control Source"** to display a list showing what source has been assigned control of each dimmer output.
- Turn the **encoder wheel** to scroll through the list.

Note: When in HTP playback mode, the list does not show when a DMX level is higher than the assigned snapshot or chase.

To restore all dimmer outputs to DMX control, select **"3-3 Clear Test"** and select **"7-3 Clear Playback"** with **"7-3-1 All"**.

4.2.25 Record a Snapshot (6-1)

Menu → 6 Record → 6-1 Snapshot

The HUB24 can record up to 8 snapshots, which can be played back later. A snapshot is a grab of the drive level of all 15 dimmer outputs.

- Set the dimmer outputs to the desired levels, using a combination of lighting console, playback other snapshots or test build outputs.
- Select **"6-1 Snapshot"** on the menu.
- Turn the **encoder wheel** to highlight the desired snapshot memory.
- Press **RECORD** to save the current drive level of all 15 outputs into the selected snapshot memory.

4.2.26 Record a Chase (6-2-#-1)

Menu → 6 Record → 6-2 Chase → 6-2-# Chase # → 6-2-#-1 Record Step

The HUB24 can record up to 8 chases, which can be played back later. Each chase can have from 1 to 15 steps. Each step is a grab of the drive level of all 15 outputs.

- Select **"6-2 Chase"** on the menu.
- Turn the **encoder wheel** to highlight the desired chase and press **SELECT**.
- Ensure **"Record Step"** is highlighted and press **SELECT**.
- Set the dimmer outputs to the desired levels, using a lighting console.
- Ensure **"New Step"** is highlighted and press **RECORD** to save the current drive level of all 15 outputs into the new step.
- Repeat the previous 2 actions for all the required steps of the chase.

To record a chase without a console, record each step of the chase in a similar way as recording a snapshot.

4.2.27 Chase Parameters (6-2-#-2)

Menu → 6 Record → 6-2 Chase → 6-2-# Chase # → 6-2-#-2 Parameters

Level, speed and crossfade parameters, that effect the way a chase is played back, are stored within the chase. The value of these parameters can be changed at anytime, even while the chase is being played back.

Level: master level of the chase, 0 to 100% (default 100).

Speed: speed of the chase, 0 = slow, 255 = fast (default 180).

Crossfade: fading rate between steps, 0 = gradual, 100 = immediate (default 50).

- Select **"6-2 Chase"** on the menu.
- Turn the **encoder wheel** to highlight the desired chase and press **SELECT**.
- Turn the **encoder wheel** to highlight **"Parameters"** and press **SELECT**.
- Turn the **encoder wheel** to highlight either **"Level"** or **"Speed"** or **"Crossfade"** and press **SELECT**.
- Turn the **encoder wheel** to change the value of the parameter. The effect of the new value will be seen immediately if the chase is being played back .
- Press **OK** to save the new parameter value, or press **CANCEL** to restore the parameter to its original value.

4.2.28 Clear a Chase (6-2-#-3)

Menu → 6 Record → 6-2 Chase → 6-2-# Chase # → 6-2-#-3 Clear Chase

The entire contents of one chase can be cleared, ie. all the steps are deleted.

Note: It is not possible to remove an individual step from a chase.

- Select **"6-2 Chase"** on the menu.
- Turn the **encoder wheel** to highlight the chase to clear and press **SELECT**.
- Turn the **encoder wheel** to highlight **"Clear Chase"** and press **SELECT**.
- Press **CONFIRM** to clear the chase completely.

4.2.29 Playback a Snapshot (7-1)

Menu → 7 Playback → 7-1 Snapshot

When playing back a snapshot, it can be assigned control of all dimmer outputs or a selection of dimmer outputs. Channels in the snapshot that have not been assigned an output will be ignored.

- Select **"7-1 Snapshot"** on the menu.
- Turn the **encoder wheel** to highlight the snapshot to playback.
- Press **SELECT**.
- Turn the **encoder wheel** to highlight **"All"** or a single dimmer output.
- Press **SELECT**.
- If "All" was not selected, turn the **encoder wheel** and select other dimmer outputs that need to be assigned to this playback.

Note: Each dimmer output can only controlled by one snapshot or chase at a time.

4.2.30 Playback a Chase (7-2)

Menu → 7 Playback → 7-2 Chase

When playing back a chase, it can be assigned control of all dimmer outputs or a selection of dimmer outputs. Channels in the chase that have not been assigned an output will be ignored.

- Select **"7-2 Chase"** on the menu.
- Turn the **encoder wheel** to highlight the chase to playback.
- Press **SELECT**.
- Turn the **encoder wheel** to highlight **"All"** or a single dimmer output.
- Press **SELECT**.
- If "All" was not selected, turn the **encoder wheel** and select other dimmer outputs that need to be assigned to this chase.

Use **"6-2-#-2 Parameters"** in Record Chase to adjust the way a chase is playing back. These parameters are level, speed and crossfade.

4.2.31 Clear Playback (7-3)

Menu → 7 Playback → 7-3 Clear Playback

Clear Playback stops the playing back of all snapshots and chases, returning those dimmer outputs to solely DMX control. It can be applied to all dimmer outputs or a selection of dimmer outputs.

- Select **"7-3 Clear Playback"** on the menu.
- Turn the **encoder wheel** to highlight **"All"** or a single dimmer output.
- Press **SELECT** to restore output(s) to DMX control.
- If "All" was not selected, turn the encoder wheel and select other dimmer outputs.

4.3 Deep clear

In the event of a software "lockup" or error message (see section 5.3), the HUB24 dimmers have a facility that enables them to be Deep Cleared.

CAUTION

THIS FUNCTION WILL ERASE THE ENTIRE MEMORY SETTINGS.

- Hold down both buttons while turning power ON to the HUB24.
- The display will show "Deep Clear".
- Press **CONFIRM** to confirm deep clear.
- The normal main screen will be shown when deep clear is finished.

  Note: It may be necessary to adjust the LCD contrast.

4.4 Download from PC

New operating software, new dimming curves and custom logos can all be downloaded to the HUB24 from a PC. This is done without opening the unit, via the front panel DMX input connector. The following items are required:

- HUB24 dimmer
- PC Download cable
- Jands Dimmer Utility software
- IBM compatible laptop or desktop computer (with Windows95 or later)

The "HUB Download Kit" can be purchased as an accessory; it contains a PC Download cable and the Dimmer Utility software on floppy disk. Alternatively a PC Download cable can be constructed from the diagram in Appendix B and the Dimmer Utility software can be download from the Jands web site: www.jands.com.au

The following procedure assumes the "Jands Dimmer Utility" software is installed on the PC. See Appendix A for instructions on installing and using this software.

To download new software, a dimming curve or a logo to the HUB, perform the following:

1. Switch the power off to the HUB24, at the three phase outlet.
2. Connect the PC Download cable between the computer serial/COM port and the DMX input of the dimmer. Disconnect any DMX terminators.
3. Start the "Jands Dimmer Utility" software on the PC and prepare to download.
4. Press and hold the **CANCEL** button while turning on power to the HUB24. "Dimmer boot ROM x:xx" will be displayed with a menu.
5. Ensure **"Burn Flash"** is highlighted and press the large button.
6. Press the large button again to confirm flash burn.
   "Start download on PC" will be displayed.
7. On the PC start downloading new software, a curve or a logo. A progress bar will be shown on the PC and "Receiving data" will be displayed on the dimmer. A software download may take up to 2 minutes to complete.
8. When complete, the dimmer checks to see if the new data is valid. If an error is displayed switch the dimmer off and start the procedure again.
9. If there are no errors the menu will be displayed. Turn the **encoder wheel** to highlight "Main Program" and press the large button to restart the dimmer.

Updating the operating software should be done with the following notes and cautions:

- The dimmer must be Calibrated (refer to sections 4.2.20 and 4.2.21) after downloading new operating software.
- It is recommended that dimmer software not be updated during a tour/show season, unless the currently installed software proves unsatisfactory for normal operation.
- More than one dimmer may be updated at a time using normal DMX cables to link the DMX Thru connector of the first dimmer to the input of the next, etc. In this case steps 4, 5 & 6 must be repeated for each dimmer, before proceeding to step 7.

5 Fault Diagnosis

NOTE

Contact your authorised JANDS Distributor for repairs or servicing.

In Australia refer all repairs to an authorised JANDS service agent or return the faulty unit in suitable packaging to:

JANDS Electronics Pty Ltd

Service Department

40 Kent Rd

MASCOT NSW 2020

Phone +61-2-9582-0909

Fax +61-2-9582-0999

5.1 Protection

The HUB24 series dimmers feature several types of protection. These can be generally classified as:

- RCD protection
- Output protection
- Thermal protection
- Neutral to Earth Overvoltage protection

5.1.1 RCD protection

The HUB24 protects against earth current faults with two Residual Current Detectors (RCDs). These disconnect all three phases when a very small fault current is detected. Both RCDs should be tested regularly by pressing the test buttons.

The left hand RCD protects the dimmer outputs and right hand RCD protects the power distribution outputs.

Note: The test button will not trip the RCD if the HUB is powered from a single phase supply.

5.1.2 Output protection

Each of the dimmer circuits are protected by a fast-acting thermal magnetic circuit breaker. These breakers are designed to pass the rated current, but will disconnect the output circuit for any overload condition (the larger the overload, the quicker the disconnection).

There are 3 power distribution circuits, with 3 sockets on each circuit. Each circuit is protected by a fast-acting thermal magnetic circuit breaker.

The breakers protect the dimmer's output devices from short-circuit loads and faulty wiring looms, and save on expensive dimmer repairs. A tripped circuit breaker indicates a load fault that requires immediate attention.

5.1.3 Thermal protection

The HUB24 dimmers primarily use convection cooling, so reducing the air flow to the unit can produce over-heating. The temperature of each of the heatsinks are individually monitored.

If the temperature of a heatsink gets close to maximum the fan on that heatsink will be turned on and a "Fan Activated" warning message is displayed (also placed in the error log). Press either button to acknowledge the warning and restore the display to normal.

If the temperature of a heatsink rises above maximum, all three dimmer channels on that heatsink will be will be shutdown. No indication of this shutdown is displayed. The channels will be restored when the heatsink temperature returns to a lower level.

5.1.4 Neutral – Earth voltage

The HUB24 will detect voltage problems generated by a poor or missing neutral connection. A poor (resistive) neutral connection can cause arcing and overheating of the connector and also allows the phase-to-neutral voltages to vary, causing overvoltage damage to components.

Bad neutral connections account for many lamp and dimmer failures. While the internal electronics of HUB dimmers can tolerate these fault conditions, other equipment run from the same mains supply generally cannot.

If the voltage between the neutral and earth exceeds the allowed maximum, all the dimmer outputs are turned OFF and a "Neutral Earth Fault" warning message is displayed (also placed in the error log). When the neutral-earth voltage condition is removed, press either button to reactivate the dimmer outputs. The outputs will restart according to the previous settings.

Neutral-earth voltages are most commonly caused by poor (resistive) neutral connections or undersized neutral wires in supply cables. Screw terminals in connectors can loosen with use and these should also be checked if this fault occurs.

The Neutral-earth fault detection can be disabled using the Fault Detect menu item (see section 4.2.17).

5.2 Output faults

If a short-circuit lamp or output cable is plugged into a dimmer output, the circuit breaker will disconnect the fault from the dimmer. In nearly all circumstances, it is quick enough to prevent damage to the output devices.

If an output device does fail the symptoms will be the dimmer output at a fixed level (off, half or full) regardless of the control level. If a fault does occur, that channel may be isolated with its circuit breaker.

Note: If a channel is not responding to DMX control, ensure it is not being controlled by playback or test (see 4.2.24) before suspecting an output device has failed.

5.3 Software exception errors

If a message appears on the display like **"ADR ERROR EXCEPTION XXXXXXXX XXXXXXXX"** where the Xs represent different characters, write down the complete message and contact JANDS Service Department or your local JANDS Distributor, giving details of the dimmer's operating conditions that caused the error. Press either button to restart the dimmer, if the error prevents normal operation a Deep Clear will be required (see section 4.3).

5.4 DMX faults

Loss of DMX signal will be indicated by " – NO DMX – " displayed at the bottom of the main screen. When DMX signal is lost, the dimmer will respond as configured until a new DMX signal is provided, or a Snapshot or Chase function is selected. See section 4.2.4 for configuring "Loss of DMX Signal".

Control consoles, when powered down, may transmit spurious DMX data which can unintentionally cause dimmer channels to turn on. Because of this, after 10 minutes of no DMX signal the HUB24 will turn off all channels that were under DMX control.

The HUB24 is protected against internal damage from most high voltage faults on any of the DMX lines. Note that the protection circuitry may take up to a minute to reset after a fault is removed from a DMX line.

5.5 Phase fault indication

The three coloured Phase LEDs, located on the left of the display, will light when all three mains phases are present.

Phase A = Red
Phase B = White
Phase C = Blue

WARNING

IF ONE OR MORE PHASE LEDS ARE OFF, *IMMEDIATELY* DISCONNECT POWER TO THE DIMMER AND CHECK THE MAINS SUPPLIES AND WIRING BEFORE RE-CONNECTING POWER.

5.6 Cold lamp filaments

Cold lamp filaments consume considerably more power than warm filaments. This means that when a lamp is flashed to full, the surge current can be much greater than the rated current for the lamp.

The cold surge current to large lamps may be enough to trip the output circuit breakers. If such nuisance-tripping of the circuit breakers occurs, the filament maybe preheated using the control desk or programming a snapshot.

Preheating is turning a channel on a very small amount (around 1%) which heats the lamp filaments and increases their electrical resistance. The lamp filaments may show a barely perceptible dull red glow. When the lamp is then turned on full, the surge current is much less and the circuit breaker is less likely to trip.

Other advantages of preheating lamps are an increase in lamp life (due to the reduction of thermal shock to the filaments) and a reduction of lamp heat up time (the lamps will flash to full slightly faster).

5.7 Output minimum loads

The HUB24 dimmer outputs will correctly control all resistive and mains-voltage incandescent loads down to 60 watts and transformer-driven incandescent lamps (eg. pinspots and low voltage halogen lamps) down to 100 watts.

The dimmer outputs will also control the speed of most "universal" motors, however some motors will require a lamp plugged in parallel.

5.8 Fault finding guide

FAULT SYMPTOM	POSSIBLE CAUSE	REMEDY
One or more channels don't respond to DMX control.	Playback or Build are active	See sections 4.2.9 and 4.2.31
	DMX start channel is set incorrectly	Change DMX start channel
	DMX cross patch is set incorrectly	Change DMX cross patch
	Not receiving DMX signal	Check console and cabling, remove upstream terminators
	Dimmer channel fault	Factory service
Breaker trips when channel flashed	Large incandescent load	Preheat the lamp
	Excessive load	Reduce channel loading
	Hot breaker	Improve ventilation to breakers or reduce ambient temperature
	Faulty breaker	Factory service
Breaker trips after prolonged operation	Excessive load	Reduce channel loading
	Lamp or wiring fault	Check lamps and wiring
	Hot breaker	Improve ventilation to breakers or reduce ambient temperature
	Faulty breaker	Factory service
Breaker trips immediately when channel is driven	Output short	Check lamps and wiring
	Massive load	Reduce channel loading
	Dimmer channel fault	Factory service
One or more channels flicker when dimmed	Current limit reached	Reduce the load on that phase Adjust current limit setting to a higher value (see 4.2.6) Recalibrate current (see 4.2.21)
	DMX line not terminated	Terminate DMX line (see 4.2.3)
	DMX source problem	Use upstream opto-isolator Replace control console Replace DMX wiring
	Dimmer channel fault	Factory service
	Insufficient or non-linear load or intermittent load wiring	Check if same load flickers on a different channel
	Mains control tones exceed limits	Contact factory

FAULT SYMPTOM	POSSIBLE CAUSE	REMEDY
One or more channels won't drive to full	Current limit reached	Reduce the load on that phase Adjust current limit setting to a higher value (see 4.2.6) Recalibrate current (see 4.2.21)
Fan Activation warning	Unbalanced load	Spread the loads out more evenly across the dimmer outputs.
	Poor ventilation	Position unit correctly (see 6.1), ensure all vents are clear, blow away any dust
	Ambient temperature above limit	Keep ambient temperature below limit
Group of three channels shutdown, Ch 1,2,3 or Ch 4,5,6 or Ch 7,8,9 or Ch 10,11,12 or Ch 13,14,15	Poor ventilation	Position unit correctly (see 6.1) , ensure all vents are clear, blow away any dust
	Ambient temperature above limit	Keep ambient temperature below limit
	Faulty Fan	Factory service
	(all the above)	Move some load from those three channels to other channels
Current reading is not zero when no outputs are on.	Out of calibration	Recalibrate current (see 4.2.21) Factory service
One or more phase LEDs are off	Faulty power socket, plug or cable	Repair or Replace
	Fault with mains supply	Call an electrician
Settings are being lost or Deep Clear continually required on power up.	Flat internal battery	Factory service
"HUB should be calibrated" is displayed at power up.	Voltage or current out of calibration	Calibrate as per 4.2.20 & 4.2.21
	Flat internal battery	Factory service
Dimmer won't respond to buttons or DMX signal.	Software lockup	Deep clear (see 4.3)

6 Installation

6.1 Free Standing

The HUB24 is primarily convection cooled, with the main air intake at the bottom and air exhaust at the back and sides - these openings must not be obstructed.

Correct positioning and adequate ventilation are essential. The HUB24 must be in the upright position, standing on its feet. Allow at least 100mm behind, at least 200mm above and at least 100mm on each side of the dimmer.

Allowing for good airflow will serve to further reduce internal dimmer temperatures and will enhance the dimmer's operational reliability.

6.2 Wall Mounting

The HUB24 may also be wall mounted in non-enclosed spaces. Mounting within cupboards is not recommended.

When wall mounted, allow at least 300mm above and at least 100mm on each side of the dimmer. It should be at least 200mm from the floor to avoid excessive ingress of dust and fluff.

Multiple HUB arrays should be spaced vertically with at least 300mm gap between the dimmers and no more than three dimmers high, to avoid excessive heating of the top dimmer. Horizontally there must be at least 150mm space between each dimmer.

The wall mounting bracket is an optional accessory. Place the wall mounting bracket against the wall, orienting it so the tabs are at the top. Mark and drill at least four fixing points and attach the bracket to the wall.

The HUB24 is attached to the pre-mounted bracket as follows:

1. Pull out the three phase cable from the cable tray.
2. While tilting, lift the HUB24 up and insert the tabs through slots in the top of the rear panel.
3. Pivot down the HUB24 fully onto the bracket, being careful to position the three phase cable in the cable groove.
4. Lock the HUB24 in place with two M4 screws through the bottom of the bracket.

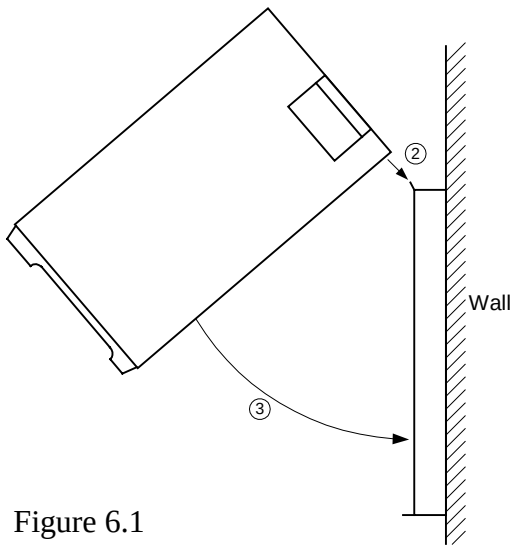


Figure 6.1

7 Maintenance

WARNING

DO NOT ALLOW THE ENTRY OF LIQUIDS OF ANY SORT INTO THE DIMMER CHASSIS.

EXTERNAL CLEANING:

If the front panel requires cleaning, wipe with a mild detergent on a damp soft cloth.

DO NOT spray liquids into the chassis.

DO NOT use solvents to clean the unit.

INTERNAL CLEANING:

The HUB24 dimmers require no internal maintenance other than periodic inspection for dust build up in the air-paths and on the heatsinks.

If the heatsinks are clogged with dirt or fluff, the dimmer must be disassembled by an authorised Jands service agent and the heatsinks cleaned.

Do not attempt to clean the heatsinks by blowing compressed air through the vent holes in the chassis.

ROUTINE MAINTENANCE:

- Test both RCDs each time the HUB24 is used.
- Inspect the heatsink surfaces for build up of dirt or fluff, which will reduce the cooling ability of the heatsinks.

Touring dimmers may need a more rigorous maintenance routine, which should also include:

- Inspection of chassis for evidence of impact damage and physical abuse.
- Inspection of output sockets for wear and damage.
- Inspection of mains power cable for wear and damage.
- Electrical checking of ground integrity from power cable to chassis and power cable to output socket grounds.
- Testing the front panel breakers isolate the outputs when switched off.

Note: The internal battery within the HUB24 will need to be replaced every 4 years or whenever settings are not retained when the power is turned off. This must be done by an authorised Jands service agent.

8 Technical Data and Specifications

PARAMETER	HUB24
No. of Outputs - Dimmer: Distribution: Opto DMX Out:	 15 9 2
Input Power Requirements:	3 Phases plus Neutral and Earth 200-265 volts phase-to-neutral 345-460 Volts AC Phase-Phase +/-10% Full size Neutral conductor 50 Amps / Phase
Upstream protection:	Max 50A per phase
Mains Frequency:	45 – 66 Hz
Load Power per Dimmer Output:	60VA - 2.4kVA
Max Dissipation:	<15W/chan (<225W total)
Max Ambient Temp:	40ºC
Cooling System	Convection with Fan Assist
Control Signal:	DMX-512 (1990) Protocol
DMX Connectors	Input: AXR-5-21B Output: AXR-5-22B
LED Indicators:	Phase Power A, B & C
Display:	128 x 64 pixels Graphics LCD
Test Function Level:	0 to 100% with 1% steps
RCD Protection	Dimmer Outputs: 1x 3phase RCD Distribution Outputs: 1x 3phase RCD
Output Protection	Dimmer: 15 x 10 amp circuit breakers Distribution: 3 x 20 amp circuit breakers
Thermal Protection	Heatsink = 85°C Fan switches on Heatsink = 100°C 3 output channels disabled
Neutral - Earth Voltage Limit	15V+/-10%
Gate Firing System	Opto-Isolator
Output risetime @ 50% dim	120 µsec 10% - 90% +/-10% (load independent)

PARAMETER	HUB24
Mains measurements – Voltage accuracy: Current accuracy:	 5% 15%
Power Supply Entry:	3 metre tail with Clipsal 56P532 plug
Output Connectors – Dimmer: Distribution:	 15 x 10 amp Clipsal 10MP 6 x 10 amp Clipsal 10MP 3 x 15 amp Clipsal 10MDP15
Size (mm): inc feet	432 (w) x 560 (h) x 300 (d)
Weight Net: Shipping:	29 kg 35 kg
Ingress Protection	IP20

8.1 DMX connector pin-outs

PIN No	CONNECTION (DMX IN)	CONNECTION (Thru)	CONNECTION (Opto Out)
1	SHIELD	SHIELD	SHIELD
2	IN-	OUT-	OUT-
3	IN+	OUT+	OUT+
4	Spare +	Spare +	N/C
5	Spare -	Spare -	N/C

8.2 Internal Mains Wiring

The HUB24 dimmer has been designed to run from three phase plus neutral mains power.

The wiring of each output to a phase is shown in the following table.

Supply Phase	Dimmer Outputs	Distribution Outputs
A	1 4 7 10 13	A
B	2 5 8 11 14	B
C	3 6 9 12 15	C

8.2.1 Mains Power - Block Diagram

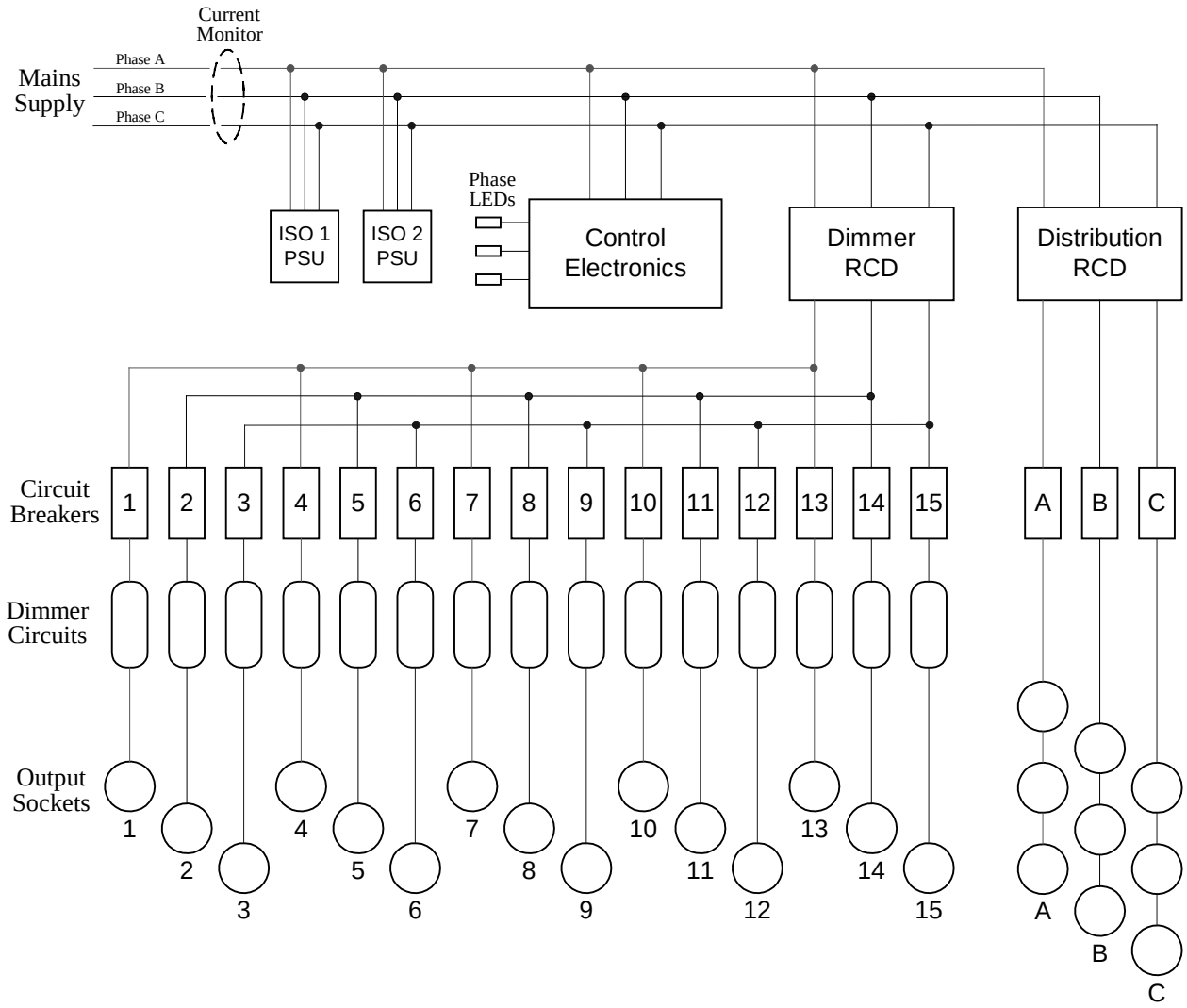


Figure 8.1

8.2.2 Mains wiring colour codes

PHASE A	RED
PHASE B	WHITE
PHASE C	BLUE
NEUTRAL	BLACK
EARTH	GREEN / YELLOW

8.2.3 Normal Three Phase plus Neutral Operation

The HUB24 is normally supplied with a three phase power cable and plug attached, suiting the vast majority of available mains supplies (ie. three phase and neutral).

The incoming mains supply must be protected by upstream circuit breakers or fuses rated at not more than the 'Upstream protection' value. This value is specified in the Technical Data and Specification table at the beginning of section 8. The dimmer's circuit breakers are not rated to correctly clear faults if the supply protection is in excess of this.

The power cable is terminated within the dimmer at the four terminals on one of the RCDs and a chassis earthing stud.

8.2.4 Single Phase Operation

It is possible to supply the HUB with one single phase feed, where three phase mains supply is unavailable. The total current drawn by the HUB is limited by the rating of the neutral conductor in the mains cable.

Max total current 50 Amps.

To extend these limits the HUB requires internal rewiring, contact the factory if this is required.

MANUAL ENDS

Appendix A Using the Dimmer Utility

The HUB24 and later HP dimmers can have updated operating software downloaded to them. The HUB24 can also have user definable dimming curves and custom logos downloaded to it. This is achieved using a PC Download cable, connected between the PC serial port and the dimmer's DMX input connector.

Jands Dimmer Utility is a Windows-based custom editor and download application. It provides the following facilities:

- Download HUB24 operating software.
- Download HP12 & HP6 operating software.
- Edit & download dimming curves.
- Edit & download custom logos.

The Dimmer Utility software only sends files to a dimmer. A dimming curve or custom logo cannot be read back from the dimmer in order to make minor changes to it, so it is important to save all curves and logos on the computer as well.

These instructions assume the user has basic experience with Microsoft Windows. For help in this area consult the Windows manual or click **Help** on the **Start** menu.

A.1 Installation

The Jands Dimmer Utility software must be installed on an IBM compatible laptop or desktop computer.

System Requirements

- PC with Pentium class processor.
- Minimum 16MB of RAM.
- Minimum 2MB of disk space.
- SVGA display (recommended 1024 x 768).
- A mouse or other pointing device.
- One spare RS232 com port.
- Microsoft Windows 95 or later.

Use the floppy disk supplied with the HUB Download Kit or download the latest software from the Jands web site: www.jands.com.au

Installing from floppy disk

1. Insert the Jands Dimmer Utilities disk into the floppy disk drive.
2. On the **Start** menu, click **Run**.
3. Type a:\setup, where 'a' is the letter assigned to the floppy drive.
4. Click **OK**.
5. The installation program will ask questions about the computer and where to install the software. Click **Next** to accept each of the default settings.
6. When all the files have finished copying, exit the installation program.

Installing from a downloaded file

1. Download Dim_Utilities.zip from the Jands web site.
2. Extract the installation files using an archive utility (eg. Winzip).
3. Run the newly extracted Setup.exe program.
4. The installation program will ask questions about the computer and where to install the software. Click **Next** to accept each of the default settings.
5. When all the files have finished copying, exit the installation program.

A.2 Main Window

On the Windows **Start** menu, click **Programs → Jands → Dim_Utility**, to start the Jands Dimmer Utility. The main window will appear across the top of the screen. Its main purpose is to launch the three utilities:

- File Download
- Curve Editor
- Logo Generator

To launch each of the utilities, click the desired utility in the **Edit** menu, or click the corresponding icon (located below the menus).

The main window also provides access to on screen help and a direct link to the download section of the Jands web site. Closing the main window will close all the descendant windows and exit the program.

A.3 File Download utility

File Download is used to download existing files from the computer to the dimmer. Operating Software files can be downloaded to the computer from the Jands web site. Curve and Logo files are created using the other utilities in this program.

File Download can manage 4 types of files:

- HUB Operating Software (*.hub)
- HP Operating Software (*.hp)
- Logo files (*.logo)
- Curve files (*.crv)

Downloading a File

Go to the main window and on the **Edit** menu click **File Download** to launch the File Download utility.

1. From the **Com Port** drop down list, select the serial port that the PC Download cable is plugged into.
2. Select a file to download:
   i. Click the **Browse** button to open the “Open” dialogue box.
   ii. From the **File Types** drop down list select one of the types of file.
   iii. From the **Look in** drop down list select the drive the file is located in.
   iv. Open the folder that contains the file, by double-clicking on the folder(s).
   v. Double-click on the file name, or type it in **File name** and click **Open**.

3. If a Curve file has been selected, the window will change to allow entering curve number and name. Click either Curve #1 or Curve #2 and type in a curve name if it needs to be changed.
4. If a Logo file has been selected, the window will change to allow entering a password. If a password is required, type the same password in both boxes. The dimmer will reject the new logo if the password is different to the password of the existing logo.
5. Prepare the dimmer so it is waiting to receive a download. See the dimmer's user manual for how to do this.
6. Click the **Start** button to start the download process. The computer will execute the download whether or not a dimmer is actually connected.
7. A progress bar will be shown at the bottom of the window. A download can take up to 2 minutes to complete.
8. When the "Download Complete" dialogue box appears, click **OK** and check the dimmer to see if the download was successful.

If required, repeat the process for another dimmer or a different file.

On the **File** menu click **Close** to close the File Download utility.

A.4 Curve Editor utility

The editor is used to created new dimming curves from scratch, to edit existing dimming curves and to download these curves to the dimmers. This is achieved using the following main functions:

- Opening an existing curve file
- Graphically editing a curve
- Saving a curve to the computer
- Download a curve to a dimmer

Go to the main window, on the **Edit** menu click **Curve Editor** to launch the Curve Editor utility.

The curve editor window consists mainly of a large graph, with control level (0-100%) along the bottom and dimmer output power up the left hand side. When the editor is launched the graph will default to a linear dimming curve.

To print the dimming curve that is currently in the editor, on the **File** menu click **Print**.

To close the curve editor, on the **File** menu click **Close**.

Opening an Existing Curve

An existing dimming curve file can be loaded into the editor, so that changes can be made to it.

1. On the **File** menu, click **Open** to open the "Open" dialogue box.
2. From the **Look in** drop down list select the drive the file is located in.
3. Open the folder that contains the file, by double-clicking on the folder(s).
4. Double-click on the file name, or type it in **File name** and click **Open**.

Graphically Editing a Curve

The curve editor provides four graphical editing methods and for very fine changes there is a fine adjustment section. These graphical editing methods are:

- Line
- Curve
- Freehand
- Bar

While editing, the position of the mouse pointer within the graph, is shown in the bottom left hand corner. The range of both X and Y are 0 to 255.

Line

On the **Methods** menu click **Line** (or click the line icon), a green working line will appear with a small square at each end. To adjust this working line place the pointer over one of the squares, hold down the left mouse button and drag the square to a new location. On the **Edit** menu click **Apply** (or click the brush icon) to apply the working line to the dimming curve. Repeat as required.

Curve

On the **Methods** menu click **Curve** (or click the curve icon), a green working curve will appear with a small square at each end and another two squares to adjust the shape of the curve. To adjust this working curve place the pointer over one of the squares, hold down the left mouse button and drag the square to a new location. On the **Edit** menu click **Apply** (or click the brush icon) to apply the working curve to the dimming curve. Repeat as required.

Freehand

On the **Methods** menu click **Freehand** (or click the pencil icon), the pointer will change from an arrow to a pencil when it is within the graph. Hold down the left mouse button and drag the pointer to draw a new part of the curve. On the **Edit** menu click **Apply** (or click the brush icon) to apply the freehand line to the dimming curve. Repeat as required.

Bar

On the **Methods** menu click **Bar** (or click the bar icon), the graph will change to 32 vertical bars and the pointer will change from an arrow to a hand when it is within the graph. To change the bars place the pointer over a bar, hold down the left mouse button and drag the bar up or down. On the **Edit** menu click **Apply** (or click the brush icon) to apply the changed bars to the dimming curve.

Fine Adjustment

A curve is stored as 256 points. Using fine adjustment the output level of each point can be individually adjusted from 0 to 255. Select a point by editing the number in **Input** (by the arrows or by typing), **Output** will display the corresponding level for that point. Adjust the selected point by editing the number in **Output** (by the arrows or by typing), and the graph will immediately show the changes.

Undo

On the **Edit** menu click **Undo** (or click the undo icon) to undo the last apply. Each click undoes one more apply. Undo does nothing if there are no applies to undo.

Redo

On the **Edit** menu click **Redo** (or click the redo icon) to reverse the action of the last undo. Each click reverses one more undo.

Blank

Blank sets the power output to zero for every control input value, this is used to start drawing a new dimming curve. On the **Edit** menu click **Blank** (or click the blank icon) to zero the curve in the editor.

Linear

Linear sets the power output directly proportional to the control input value, this is used to start drawing a new dimming curve. On the **Edit** menu click **Linear** (or click the linear icon) to linearise the curve in the editor.

Curve Name

A name is assigned to the dimming curve by clicking in the text box (located in the top right hand corner) and typing a new name. This name is what is displayed on the dimmer when the user is assigning a control curve to a dimmer channel.

Saving a Curve

The dimming curve that is currently in the editor can be saved as a file on the computer.

1. On the **File** menu, click **Save** to open the "Save As" dialogue box.
2. From the **Save in** drop down list select the drive the curve will be saved to.
3. Open the folder that is to contain the file, by double-clicking on the folder(s).
4. Type a file name in **File name** and click **Save**.

Downloading the Curve to a Dimmer

The dimming curve that is currently in the editor can be download to a dimmer directly from the curve editor.

1. On the **File** menu click **Curve Download** (or click the download icon) to open the curve download window.
2. Click either Curve #1 or Curve #2 and type in a curve name if it needs to be changed.
3. From the **Com Port** drop down list, select the serial port that the PC Download cable is plugged into.
4. Prepare the dimmer so it is waiting to receive a download. See the dimmer's user manual for how to do this.
5. Click the **Start** button to start the download process. The computer will execute the download whether or not a dimmer is actually connected.
6. A progress bar will be shown at the bottom of the window. Each curve will take about 5 seconds to download.
7. When the "Download Complete" dialogue box appears, click **OK** and check the dimmer to see if the download was successful.
8. Click the **Close** button to return to the curve editor.

A.5 Logo Generator utility

The logo generator is used to draw customs logos from scratch, to modify existing images and to download logos to the dimmers. This is achieved using the following main functions:

- Opening an existing logo file
- Importing a bitmap file
- Graphically editing a logo
- Saving a logo to the computer
- Download a logo to a dimmer
- Erasing the logo and password from a dimmer

Go to the main window, on the **Edit** menu click **Logo Generator** to launch the Logo Generator utility.

The logo generator window consists mainly of a grid of squares, which represent each of the pixels in the logo. It starts with a blank logo (all pixels white).

The grid can be made larger or smaller on the screen, by clicking **Enlarge** or **Reduce** on the **Edit** menu (or click the plus or minus magnify icons).

To print the logo that is currently in the logo generator, on the **File** menu click **Print**.

To close the logo generator, on the **File** menu click **Close**.

Opening an Existing Logo File

An existing custom logo file can be loaded into the logo generator, so that changes can be made to it.

1. On the **File** menu, click **Open** to open the “Open” dialogue box.
2. From the **Look in** drop down list select the drive the logo file is located in.
3. Open the folder that contains the file, by double-clicking on the folder(s).
4. Double-click on the file name, or type it in **File name** and click **Open**.

Importing a Bitmap File

The logo generator can import bitmap files, which are monochrome (black & white) and not greater than 68 x 43 pixels in size.

1. On the **File** menu, click **Import** to open the “Import” dialogue box.
2. From the **Look in** drop down list select the drive the bitmap file is located in.
3. Open the folder that contains the file, by double-clicking on the folder(s).
4. Double-click on the file name, or type it in **File name** and click **Open**.

A Windows drawing or paint program can be used to prepare the image and convert it to a conforming bit map file.

Eg. using Microsoft Paint:

- Open an existing bitmap file.
- On the **Image** menu click **Attributes** and select **Black & White**.
- On the **Image** menu click **Stretch/Skew** and use stretch to scale the image to fit.
- Save the image with a new file name as a monochrome bitmap.

Graphically Editing a Logo

The logo generator provides four graphical editing methods and erase functions. The graphical editing methods are:

- Dot
- Line
- Marquee
- Text

While editing, the position of the mouse pointer within the grid, is shown in the bottom left hand corner. The top left hand pixel is location X=1 and Y=1.

Dot

On the **Methods** menu click **Dot** (or click the pencil icon). Place the pointer over a pixel and press the left mouse button to make the pixel black. Hold the left mouse button and drag the pointer to draw on multiple pixels.

Line

On the **Methods** menu click **Line** (or click the line icon). Place the pointer at the start of the line, hold down the left mouse button (a blue square will mark the start pixel) and drag the pointer to draw the line. Repeat as required.

Marquee

Marquee enables a rectangular group of pixels to be moved within the grid. On the **Methods** menu click **Marquee** (or click the marquee icon). Place the pointer at one corner of the group, hold down the left mouse button and drag the pointer to define the area to be moved. When inside the selected area the pointer will change from an arrow to a hand, hold the left mouse button and drag the pixels to a new position.

Font

On the **Font** menu click the desired text size. All text added to the logo from then on will be of the new size.

Text

On the **Methods** menu click **Text** (or click the 'A' icon). Place the pointer at the start of the text and press the left mouse button, a flashing vertical line will appear. Carefully type the desired text (backspace has no effect). Repeat as required.

Erase Dot

Regardless of the current method, press the right mouse button to change the pointer to an eraser and erase the pixel (turn to white). Hold the right mouse button and drag the pointer to erase multiple pixels.

Erase Block

On the **Methods** menu click **Marquee** (or click the marquee icon). Place the pointer at one corner of a block of pixels, hold down the left mouse button and drag the pointer to define the block to be erased. Press 'Delete' on the keyboard to erase all the pixels inside the selected area.

Reverse

On the **Edit** menu click **Reverse** (or click the reverse icon) to change all the black pixels to white and all the white pixels to black. Note: the background colour remains white.

Undo

On the **Edit** menu click **Undo** (or click the undo icon) to undo the last draw. Each click undoes one more draw. Undo does nothing if there are no draws to undo.

Redo

On the **Edit** menu click **Redo** (or click the redo icon) to reverse the action of the last undo. Each click reverses one more undo.

Blank

Blanks the entire logo (sets all pixels to white), this is used to start drawing a new logo. On the **Edit** menu click **Blank** (or click the blank icon) to blank the logo.

Saving a Logo

The logo that is currently in the logo generator can be saved as a file on the computer.

1. On the **File** menu, click **Save** to open the "Save As" dialogue box.
2. From the **Save in** drop down list select the drive the logo will be saved to.
3. Open the folder that is to contain the file, by double-clicking on the folder(s).
4. Type a file name in **File name** and click **Save**.

Downloading the Logo to a Dimmer

The logo that is currently in the logo generator can be downloaded to a dimmer directly from the logo generator.

1. On the **File** menu click **Logo Download** (or click the download icon) to open the logo download window.
2. If a password is required type the same password in both boxes. The dimmer will reject the new logo if the password doesn't match the existing password.
3. From the **Com Port** drop down list, select the serial port that the PC Download cable is plugged into.
4. Prepare the dimmer so it is waiting to receive a download. See the dimmer's user manual for how to do this.
5. Click the **Start** button to start the download process. The computer will execute the download whether or not a dimmer is actually connected.
6. A progress bar will be shown at the bottom of the window. A logo will take about 2 seconds to download.
7. When the "Download Complete" dialogue box appears, click **OK** and check the dimmer to see if the download was successful.
8. Click the **Close** button to return to the logo generator.

The password is optional until one is downloaded into the dimmer. Once the dimmer has a password it must be remembered or it will not be possible to change the logo.

Erasing the Logo from a Dimmer

The logo and password that are currently in the dimmer can be erased.

1. On the **File** menu click **Erase Logo** (or click the lightning icon) to open the erase logo window.
2. If the logo in the dimmer has a password then type it in the password box. The dimmer will reject the request to erase logo if the password is wrong.
3. From the **Com Port** drop down list, select the serial port that the PC Download cable is plugged into.
4. Prepare the dimmer so it is waiting to receive a download. See the HUB user manual for how to do this.
5. Click the **Erase** button to send the erase logo request to the dimmer.
6. When the “Erase Done” dialogue box appears, click **OK** and check the dimmer to see if the erase was successful.
7. Click the **Close** button to return to the logo generator.

ᘓᘒ APPENDIX ENDS ᘓᘒ

Appendix B PC Download Cable

The following cable can be used for downloading files from a PC to both HP dimmers and HUB24 dimmers. It consists of very commonly available parts.

Parts List

1x Female D9 connector

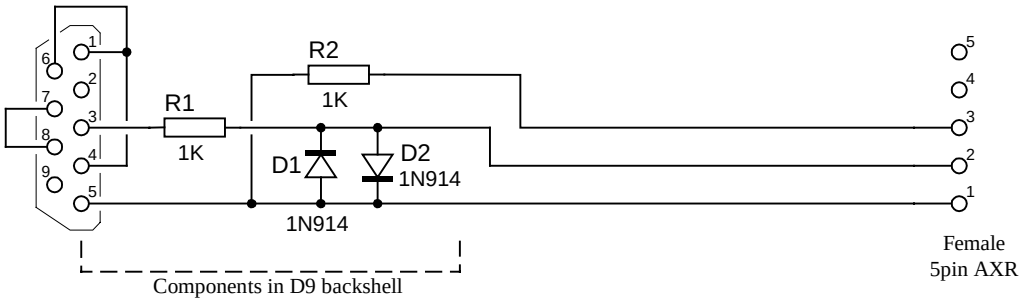
1x D9 backshell

2x 1K ¼watt resistors

2x 1N914 diodes

1x Female 5pin AXR plug

5m of DMX cable



APPENDIX ENDS